REMARKS

Paragraph numbers in the Remarks refer to the paragraphs as numbered in the application as published (US Application Publication No. 20040110219).

With entry of the present amendment, claims 1 to 12 are pending. Claims 1 to 3 are amended. No claims have been cancelled or added. Claims 4 to 12 have been withdrawn. No new matter is believed to be presented by the foregoing amendments. Support for the amendment to claim 1 is found in the application at paragraph [0036]. Support for the amendment to claim 2 is found in the application at paragraphs [0039] and [0044]. Support for the amendment to claim 3 is found in the application at paragraphs [0039], [0043], and [0044]. In addition, various amendments of an editorial nature have been made to the claims and claim 1 has been amended to delete non-elected subject matter.

Priority Document

The Examiner stated that the certified copy of the foreign priority application (European Application No. 02024539.5) which was filed to establish an October 31, 2002, priority date for the present application actually related to a different invention from that of the present application. As a result, the Examiner is only recognizing the October 29, 2003, filing date of the present application as the priority date. The `539 application, however, does indeed relate to the present application. Applicants will further investigate this matter and, if found necessary, submit a correct certified copy of the `539 application to establish October 31, 2002, as the priority date.

Objections to the Specification

The Examiner objected to the specification because it contained trademarks without proper identification as being trademarks and without being accompanied by generic terminology. This has been corrected with the present amendment.

The Section 112, Enablement Requirement, Rejection

Claim 1 was rejected under the enablement requirement of Section 112, first paragraph, because the claim allegedly encompasses a method for determining the presence or absence of pancreatic cancer by detecting the presence of any nucleic acid (genomic or mRNA) which encodes any fragment of a polypeptide of SEQ ID NO: 2. According to the Examiner, the application does not enable such a method when the nucleic acid to be detected is genomic DNA and does not enable such a method when the nucleic acid encodes only a fragment of SEQ ID NO: 2.

With respect to whether the nucleic acid to be detected may be genomic DNA, the claim has been amended to define the nucleic acid as being mRNA.

Applicants respectfully traverse the remainder of the present rejection. The Examiner has not properly interpreted the claim. The application, at paragraph [0036], clearly states that "UKW" refers to "a nucleic acid **encoding** a polypeptide of SEQ ID NO: 2" (emphasis added). As such, claim 1 should be read to define the method as being one involving the step of detecting a nucleic acid encoding the polypeptide of SEQ ID NO:2. A nucleic acid which encodes only a fragment of a polypeptide of SEQ ID NO: 2 and nothing else can not be said to "encod[e] a polypeptide of SEQ ID NO: 2" since such a nucleic acid would not encode the remaining amino acids of SEQ ID NO: 2. While the Examiner has stated that the claims are being interpreted broadly, an interpretation of the claim as referring to nucleic acids which encode only a portion of SEQ ID NO: 2 is not a reasonable interpretation. Nevertheless, to clarify that the relevant nucleic acid must encode the full length of SEQ ID NO: 2, claim 1 has been amended to define the nucleic acid as being one which encodes a polypeptide having the amino acid sequence of SEQ ID NO: 2. The Examiner has not presented an argument that the claimed method is not enabled when the nucleic acid to be detected is one which encodes the amino acid sequence of SEQ ID NO: 2.

Claims 2 and 3 were rejected under the enablement requirement of Section 112, first paragraph, because the claims allegedly cover methods which involve the use of nucleic acid probes which hybridize, under any condition, with a nucleic acid of SEQ ID NO: 1 or a fragment thereof or a complement of such a nucleic acid. According to the Examiner, the application does not enable the use of probes which can hybridize with such sequence under any hybridization condition. This rejection has been overcome by the present amendment to claims 2 and 3 in which the methods therein have been further defined to specify specific hybridization conditions.

Claims 2 and 3 were rejected under the enablement requirement because the term "complementary", as used to describe a nucleic acid probe that is complementary to SEQ ID NO: 1 or a fragment thereof, is allegedly broad enough to encompass nucleic acid sequences that are complementary only in part to SEQ ID NO: 1 or a fragment thereof. The rejection is traversed respectfully. The Examiner has correctly stated that, since the term "complementary" is not defined in the application, the conventional meaning of the term is to be used in interpreting the claim. The Examiner has used the definition of "complementary" in U.S. Patent No. 5,912,143 as being representative of the conventional meaning of the term. She, however, has incorrectly interpreted the definition provided in the `143 patent. The `143 patent states that the term "complementary" refers to "the **natural binding** of polynucleotides under permissive salt and temperature conditions by **base-pairing**" (emphasis added). One skilled in the art would know that adenine naturally binds to thymine and guanine naturally binds to cytosine. Thus, a second nucleic acid is said to be "complementary" to a first nucleic acid only if the second nucleic acid is one which consists of the nucleotides which naturally bind to the corresponding nucleotides of the first nucleic acid. The `143 patent even states that "the sequence 'A-G-T' binds to the complementary sequence 'T-C-A'." The Examiner points to the statement in the `143 patent that "[c]omplementar**ity** between two single-stranded molecules may be 'partial', in which only some of the nucleic acids bind, or it may be complete when total complementar**ity** exists between the single stranded molecules" (emphasis added) as showing that the term "complementar**y**" is broad

enough to encompass nucleic acids in which only some of the nucleotides naturally bind to the corresponding nucleotides of a second nucleic acid. Applicants do not agree with this interpretation. This last quoted sentence is being used simply to describe the adjective "complementarity" (emphasis added) between two nucleic acid sequences and does not refer to whether those nucleic acid sequences are complementary. In essence, a nucleic acid sequence is said to have "partial" "complementarity" to a first nucleic acid sequence if only part of that sequence is complementary to that nucleic acid sequence and to have "complete" "complementarity" when the entire nucleic acid sequence is complementary to the first nucleic acid sequence. The Examiner has incorrectly imported the above statements with respect to "complementarity" into the definition of "complementary". Her interpretation is inconsistent with the above definition of complementary" as referring to "the **natural binding** of polynucleotides under permissive salt and temperature conditions by **base-pairing**" (emphasis added). If the term "complementary" would be broad enough to include partially complementary nucleic acid sequences as well as those that are completely complementary, then there would be no need to use the modifier "partial". In view of the correct definition of "complementary", applicants submit that the present claims are enabled. The Examiner has not presented an argument that the claimed method is not enabled when the probe is complementary (as the term is correctly defined) to SEQ ID NO: 1 or a fragment thereof.

Claims 2 and 3 were further rejected under the enablement requirement because the specification allegedly fails to show how one skilled in the art, upon use of the methods therein, could determine whether the test sample contains pancreatic cancer cells or fluid therefrom.

The rejection, as it relates to claim 2, is respectfully traversed because claim 2 recites a step in which the level of hybridization present between the probe and nucleic acids in a test sample is compared with the level of hybridization between the probe and nucleic acids in a sample that is known to not contain pancreatic tumor cells. Paragraph [0044] of the specification states that an approximately 15-fold increased amount of UKW mRNA (the specification states "UKW gene" but the intent was to state

"UKW mRNA") in a test sample in comparison with the respective amount in a control sample would be an indication that the test sample contains pancreatic tumor cells (the level of mRNA present is indicated by the level of probe hybridization). As such, the specification clearly shows how one skilled in the art would determine whether the test sample contains pancreatic cancer cells or fluid therefrom.

The rejection, as it relates to claim 3, has been overcome by the present amendment to claim 3 in which the method is further defined to include the step of comparing the levels for UKW mRNA (as demonstrated by the level of hybridization) with the levels of mRNA for a housekeeping gene. As stated in the application at paragraph [0044], "a test sample having an upregulated UKW gene may have ... an at least 3-fold greater amount of UKW mRNA than mRNA of a housekeeping gene..." As the upregulation of UKW expression is linked to the presence of pancreatic cancer, this step would allow for one skilled in the art to determine whether the test sample contains pancreatic cancer cells.

Claim 3 was further rejected under the enablement requirement because the application allegedly does not enable the practice of the method of the invention in which the sample used is a supernatant derived from a cell culture. This rejection has been overcome by the present amendment in which reference to an embodiment involving a sample which is a supernatant has been deleted.

For the foregoing reasons, the aforementioned rejections of claims 1 to 3 under the enablement requirement of Section 112, first paragraph, are traversed or overcome. The rejections should, therefore, be withdrawn.

The Section 112, Written Description Requirement, Rejection

Claim 1 was rejected under the written description requirement of Section 112, first paragraph, because the claim allegedly encompasses a method for detecting the

presence of any nucleic acid which encodes any fragment of a polypeptide of SEQ ID NO: 2 and the application does not provide support for such a supposedly broad claim.

Applicants respectfully traverse the present rejection. As stated above, the application, at paragraph [0036], clearly states that "UKW" refers to "a nucleic acid **encoding** a polypeptide of SEQ ID NO: 2" (emphasis added). As such, claim 1 should be read to define the method as being one involving the step of detecting a nucleic acid encoding the polypeptide of SEQ ID NO:2. A nucleic acid which encodes only a fragment of a polypeptide of SEQ ID NO: 2 and nothing else can not be said to "encod[e] a polypeptide of SEQ ID NO: 2" since such a nucleic acid would not encode the remaining amino acids of SEQ ID NO: 2. While the Examiner has stated that the claims are being interpreted broadly, an interpretation of the claim as referring to nucleic acids which encode only a portion of SEQ ID NO: 2 is not a reasonable interpretation. Nevertheless, to clarify that the relevant nucleic acid must encode the full length of SEQ ID NO: 2, claim 1 has been amended to define the nucleic acid as being one which encodes a polypeptide comprising the amino acid sequence of SEQ ID NO: 2.

Applicants submit that the definition of the nucleic acid as being one which encodes a polypeptide having the amino acid sequence of SEQ ID NO: 2 constitutes a "relevant identifying characteristic". The structure of the nucleic acid must be such that it encodes the amino acid sequence of SEQ ID NO: 2. One of skill in the art would know exactly which codons are necessary to encode such a sequence. Therefore, a limited number of nucleic acids can encode such a sequence. As such, this constitutes a "precise definition ... of the claimed subject matter sufficient to distinguish it from other materials" as required under the standard set in University of California v. Eli Lilly and Co., 119 F.3d 1559 (Fed.Cir.1997). Further, as the level of such nucleic acid is increased in pancreatic cancer cells, the level of such nucleic acid is useful for determining the presence of absence of pancreatic cancer.

Claims 2 and 3 were rejected under the written description requirement of Section 112, first paragraph, because the claims allegedly cover methods which involve the use of nucleic acid probes which hybridize, under any condition, with nucleic acids in the test sample. This rejection has been overcome by the present amendment to the claims. The claims now specify specific hybridization conditions.

Claims 2 and 3 were also rejected under the written description requirement of Section 112, first paragraph, because the claims allegedly cover methods which involve the use of probes which are complementary only in part to SEQ ID NO: 1 or (for claim 2) a fragment thereof. As stated above in the traversal of the related enablement requirement rejection, the Examiner has misinterpreted the claim. A nucleic acid sequence that is complementary to SEQ ID NO: 1 is clearly one which consists of nucleotides which naturally bind (adenine naturally binds to thymine and guanine naturally binds to cytosine) to the corresponding nucleotides of SEQ ID NO: 1. Therefore, as there is only one SEQ ID NO: 1, only one nucleic acid sequence can be complementary thereto. Likewise, for any fragment of SEQ ID NO: 1 containing at least 50 contiguous nucleotides thereof (claim 2 has been amended to specify that such a fragment must contain at least 50 contiguous nucleotides of SEQ ID NO: 1), only a specific nucleic acid can be complementary thereto. As such, one skilled in the art, upon review of the application, would be able to know the structures of the probes which may be used in the present invention. This constitutes a "precise definition ... of the claimed subject matter sufficient to distinguish it from other materials" as required under the standard set in University of California v. Eli Lilly and Co., 119 F.3d 1559 (Fed.Cir.1997).

For the foregoing reasons, the aforementioned rejections of claims 1 to 3 under the written description requirement of Section 112, first paragraph, are traversed or overcome. The rejections should, therefore, be withdrawn.

The Section 112, Second Paragraph, Rejections

Claims 1 to 3 were rejected because they allegedly do not contain, in the body of the claim, a step which clearly relates back to the preamble.

The rejection, as it relates to claim 1, is respectfully traversed. The preamble of claim 1 states that it relates to a method for determining the presence or absence of pancreatic cancer in a patient. Step (iii) of claim 1 recites a step of comparing the level of nucleic acid or polypeptide in a test sample with a predetermined standard value and, therefrom, determining the presence or absence of pancreatic cancer in the patient. As such, claim 1 does indeed contain a step which clearly relates back to the preamble.

The rejection, as it relates to claims 2 and 3, has been overcome by the present amendment to the claims. The preamble to claim 2 states that the claimed process is one for determining whether a test sample contains pancreatic tumor cells or fluid therefrom. As amended, step (c) of claim 2 now recites the determination of whether the test sample contains pancreatic tumor cells or fluid therefrom based on the comparison performed therein. The preamble to claim 3 states that the claimed method is for the detection of pancreatic tumor. As amended, step (c) of claim 3 now recites the determination of whether a pancreatic tumor is present in a test sample based on the comparison performed therein.

Claim 1 was further rejected because the phrase "an amount of nucleic acid" was not clear. "The amount of nucleic acid" refers to the amount of mRNA detected using the claimed method. This rejection is overcome by the present amendment. The claim now states that the method involves the detection of the presence of mRNA and that the amount of mRNA detected is then compared with a predetermined standard value.

Claim 2 was rejected as being indefinite in the phrase "stringent hybridization conditions". This rejection has been overcome by the present amendment to the claim. Claim 2 now recites specific hybridization conditions.

Claim 2 was further rejected as being indefinite in the use of the term "greater amount" in step (c) because one skilled in the art allegedly would not understand how much greater the amount would have to be in order to determine the presence or absence of pancreatic cancer. This rejection is traversed respectfully. The claims are to be read in the light of the specification and the specification clearly states that an approximately 15-fold increased amount of UKW mRNA in a test sample in comparison with the respective amount in a control sample would be an indication that the test sample contains pancreatic tumor cells (see paragraph [0029]).

Claim 2 was further rejected as being indefinite in the use of the term "derived from" in the phrase "a process for determining whether or not a test sample of tissue or fluid of a patient contains pancreatic tumor cells or is derived from pancreatic tumor cells derived from pancreatic tumor cells." This rejection has been overcome by the present amendment to the claim which clarifies that, in embodiments in which the test sample contains fluid from a patient, the process is one of determining whether the fluid is from pancreatic tumor cells.

Claim 3 was rejected as being indefinite in the use of the phrase "preferably...". This rejection has been overcome by the present amendment to the claim in which this phrase, which does not further limit the claim, has been deleted.

Claim 3 was further rejected as being indefinite for including the phrase "or a mixture of nucleic acids" which allegedly does not have an antecedent basis. This rejection is traversed because this phrase does not exist in the claim.

Claim 3 was also rejected as being indefinite because it omits essential elements, namely recitation of a control for comparison in order to determine the presence or absence of pancreatic cancer. This rejection has been overcome by the present amendment to the claim. The level of UKW mRNA is indicative of the presence of pancreatic cancer and the level of hybridization found when using the claimed method is

indicative of the level of UKW mRNA. The claim now recites comparing the level of hybridization with the level of mRNA of a housekeeping gene. As stated in paragraph [0044] of the application, an at least 3-fold greater amount of UKW mRNA compared with the amount of mRNA of a housekeeping gene demonstrates upregulated UKW gene (and, therefore, the presence of pancreatic cancer).

CONCLUSION

The foregoing amendment is fully responsive to the Office Action issued February 6, 2007. Applicants submit that claims 1 to 3, as amended, are allowable. Early and favorable consideration is earnestly solicited.

If the Examiner believes there are other issues that can be resolved by telephone interview, or that there are any informalities remaining in the application which may be corrected by Examiner's Amendment, a telephone call to the undersigned attorney is respectfully solicited.

Applicants believe that no fee is due with this communication. However, should the Patent Office determine that a fee is owed, or a credit is due to applicant, the Patent Office is hereby authorized to charge any required fees, including any extension of time and/or excess claim fees, or credit any overpayment, to applicant's Deposit Account 08-2525 as appropriate.

Respectfully submitted,

Gene J. Yao
Attorney for Applicant(s)
(Reg. No. 47,193)
340 Kingsland Street
Nutley, New Jersey 07110
Telephone: (973) 235-6993
Telefax: (973) 235-2363

282792